Halton Windis DWE, air curtain - Technical description

Contents

1 Introduction

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1.2 About this document

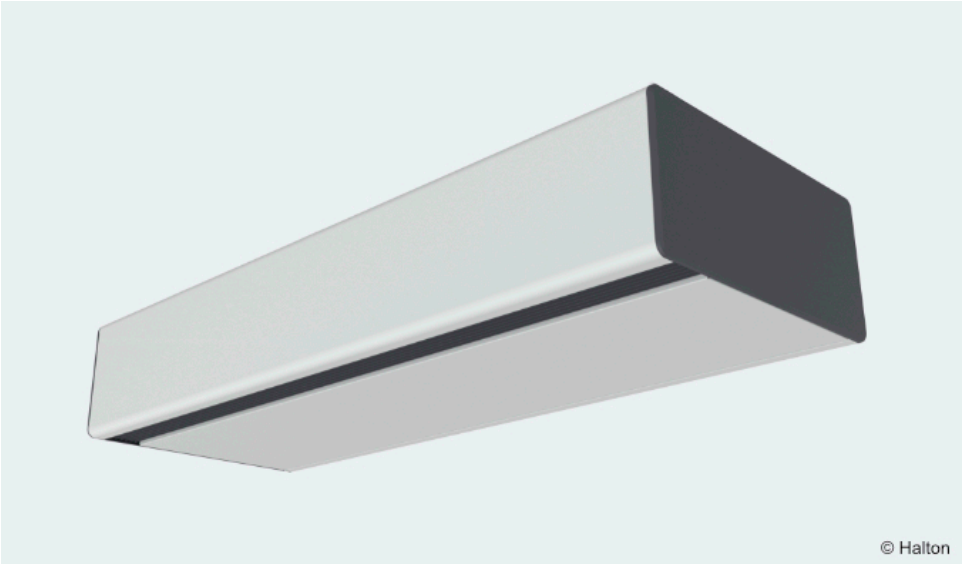
This technical description is intended for anyone needing detailed technical information about the product. It also provides general design-related information, such as design examples. More detailed designs can be carried out using the Halton eHIT selection tool, available at ***www.ehit.halton.com***.

1.3 Summary of changes

Release	Date	Description
1.1	08-OCT-2025	Minor corrections and Finnish translations
1.0	11-NOV-2024	First approved version

2 Product description

2.1 Overview



Halton Windis DWE is an air curtain that generates an invisible and uniformly controlled air stream directed downwards in an open doorway. It is a water-heated air curtain designed for exposed installation. It is compact and compatible with various entrance types, and installation is up to a maximum height of 3.5 m. With its integrated energy measurement, energy consumption remains under control. The unit employs EC motors and features with adjustable impulse force for an efficient air barrier function.

Application area

- Excellent for retail spaces, shops, offices, schools, and daycares.
- Interior or exterior doorways.
- Designed for horizontal installation directly above door openings with a maximum height of 3.5 m.

Key features

- Fast and easy to install, requires no opening of the product for connection.
- Exposed mounting and water heated.
- Connectivity to automation is simple and via a QR code.
- Built-in thermal energy measurement.
- Intelligent Controller - with web server and ready-to-use Modbus and BACnet interfaces.
- Adjustable
- Integrated water valves.

2.2 Operating principle

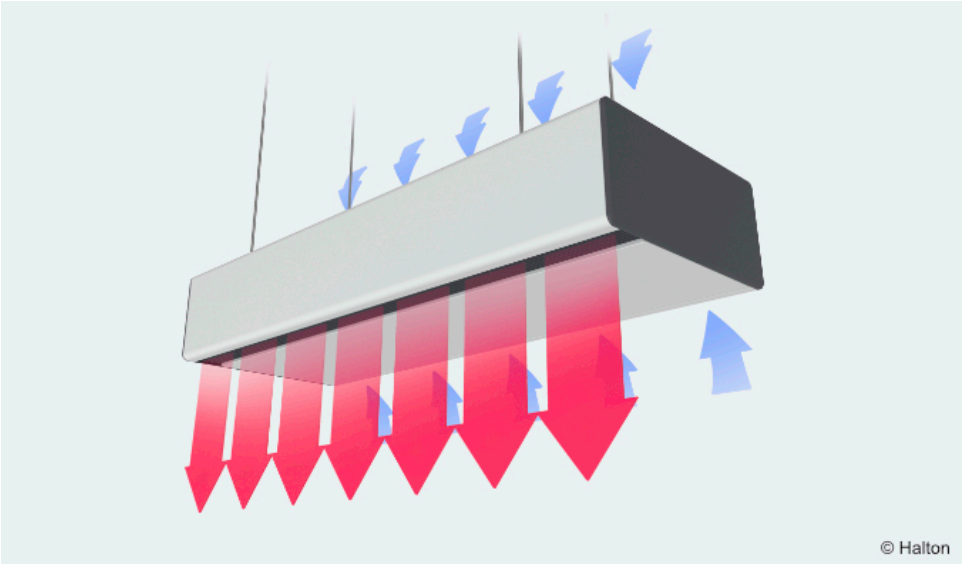


Fig. 1. Operating principle of Halton Windis DWE air curtain

Air curtains, distinguished by their unique aerodynamic design, offer a highly efficient solution for separating two temperature zones or two environments. This unique design not only provides effective separation but also contributes significantly to energy conservation, making it a cost-effective choice.

When faced with challenges of natural heat exchange through open doors, air curtains step in as a practical solution. These curtains effectively separate two areas or environments, halting the natural heat transport and thereby playing a crucial role in energy conservation.

In principle, an air curtain is a device equipped with a fan and a heat exchanger (water or electrical). It operates by pushing air to the floor in a smooth, laminar flow, creating a 90% air seal. This seal, akin to an invisible waterfall, effectively stops heat transfer, dust, and flying insects, thereby maintaining a controlled indoor environment.

2.3 Key technical data

Feature	Description
Airflow rate	73-1404 l/s or 1750-3900 m^3/h
Sound pressure level	30-77 dBa
Dimensions	Height [H] = 600 mm
	Width [W] = 1017, 1517, 2017, 2517 mm
Weight	46 - 95 kg
Adjustability / Positions	3
Mounting height	3.5 m (max)

2.4 Features and options

Feature	Description
Color	**Frame**: RAL 7035 **Grill**: RAL 7024
Casing	Galvanised steel
Fans	EC - motor, Ball bearings
Heat exchanger	Copper (3/8"), aluminium, G1" thread, max 6 bar/100°C
Electrical connections	Power supply 2 m, safety grounded plug
Other connections	M12 connector, Ethernet, USB
Standard delivery	2-way heating valve, Heating energy meter, Filter G4, Room sensor NTC10
Internal temperature sensors	▪ Water in and water out ▪ Air in and air out
Cables	10 m cable - BMS - RS-485 connection (M12 connector)
	10 m cable - Room sensor (M12 connector)
	10 m cable - Door switch (M12 connector)
	10 m cable - Slave device (M12 connector)

2.5 Structure and materials

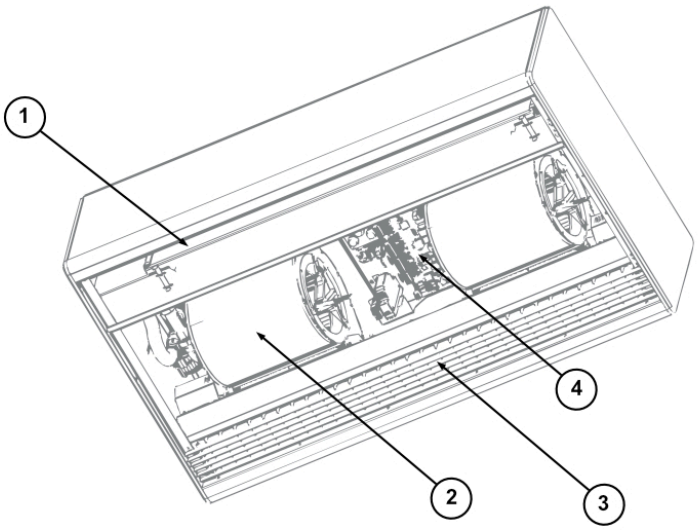


Fig. 2. Halton Windis DWE structure

No.	Part	Description	Note
1	Filter	Aluminium	-
2	EC-fan	Metal	-
3	Outlet grille	Aluminium / Steel	-
4	Intelligent controller	-	-

2.6 Dimensions and weight

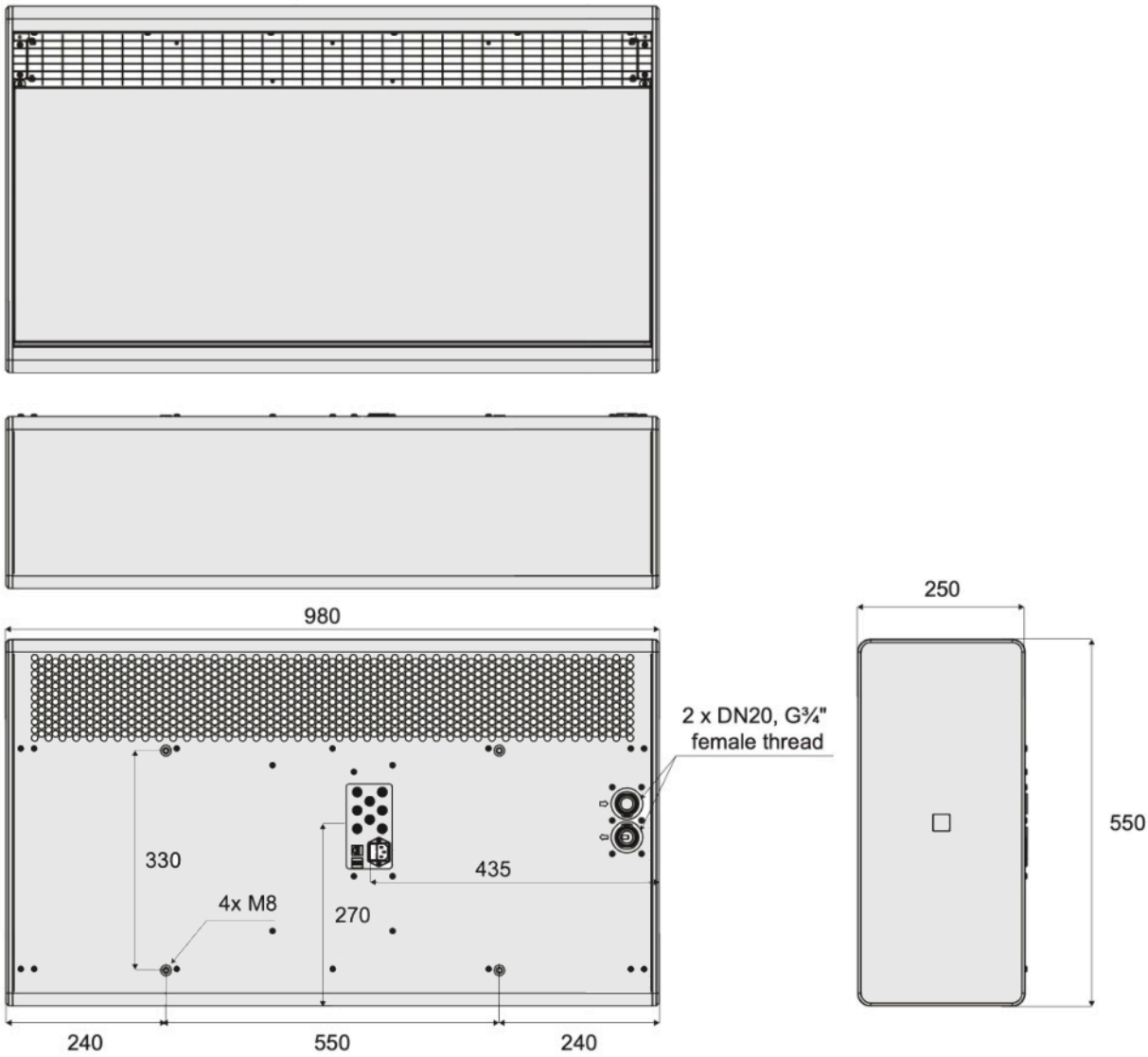


Fig. 3. Dimensions of Halton Windis DWE

DWE	L [mm]	W [mm]	H [mm]	L1 [mm]	Weight [kg]
1000	980	250	550	435	46
1500	1480	250	550	435	60

DWE	L [mm]	W [mm]	H [mm]	L1 [mm]	Weight [kg]
2000	1980	250	550	435	79
2500	2480	250	550	435	95

2.7 Specifications

The Halton Windis DWE is an air curtain designed for exposed installation. The system features integrated thermal energy measurement using precise ultrasound technology, a smart controller with a built-in web server and ready Modbus and BACnet interfaces, and an adjustable blowing impulse to tailor specific needs.

Function

- Four product models equipped with integrated controls eliminate the need for additional controls on the walls and allow for a clean, streamlined design.
- Adjustable blowing speeds and an inbuilt schedule function for efficient management.
- Includes programmatic freeze protection and a Master-Slave function for synchronized operation.
- Integrated control valves and actuators, along with energy measurement, air bubble detection, and pressure measurement of the heating network.
- Featuring a counter for door openings, enhancing overall functionality.
- Supporting ECM engines and allows optimized operation for each building.
- Ready-to-implement graphic images simplify design processes.
- Functional changes to easily adapt to specific needs.

Structure

- Available in four different widths: 1000 mm, 1500 mm, 2000 mm, and 2500 mm.

Material

- The frame is painted with light grey RAL 7035 and the grill with graphite grey RAL 7024.
- The heating radiator system features 3/8" copper pipes with aluminium strips for enhanced heat dissipation and a G1" internal thread for secure connections. Designed to operate at a maximum pressure of 6 bar and a temperature of up to 100°C.
- The electrical connections include a 2 m power supply with safety grounding, a spark plug, and additional interfaces like an M12 connector, Ethernet, and USB.
- The fan is equipped with centrifugal blades and ball bearings for efficient and reliable operation.
- The system includes a 2-way heating valve, a heat energy meter, a G4 filter, adjustable blow impulse, and supports Modbus TCP, BacNet TCP, Modbus RTU, BacNet MSTP, and an I/O interface for connectivity.

Integrated controller

- The automation system of the door curtain unit provides significant advantages by ensuring all components are pre-tested and the control system operates as intended.
- The pre-tested control system adapts quickly to changing conditions, optimizing performance and energy efficiency in real time.
- This advanced controller integrates seamlessly with building automation systems via Modbus or BACnet interfaces. Network topology options include TCP/IP or RS-485, ensuring flexible and robust

communication.

- It contains various integrated sensors for measuring air temperature, water-side energy meter, water pressure and freeze protection. Apart from these, external sensors can be connected.
- The controller can be integrated into the BMS, allowing all control signals to be managed directly through the BMS, except for the freeze protection function, which cannot be bypassed.

2.8 Order code

DWE-M-L; VC-CO-ZT

Main options	
M = Model	
S	Small
L = Length [mm]	1000, 1500, 2000, 2500

Other options and accessories	
VC = Impulse force	
1	Position 1
2	Position 2
3	Position 3
CO = Colour	
TG	Grey
x	Special colour (RAL xxxx)
ZT = Tailored product	
N	No
Y	Yes (ETO)

Order code example
DWE-S-1500; VC=2, CO=TG ,ZT=N

3 Design information

3.1 Design considerations

3.1.1 Installation

Installation instructions, covering installation options, space requirements, wiring, and other installation requirements, are available in a separate document.

See **Halton Windis DWE Installation, commissioning, operations and maintenance guide**. Preparation is in progress, and will enable the link as soon as it becomes available.

3.1.2 Commissioning

The commissioning of both the central unit and the Controller is available in a separate document.

See **Halton Windis DWE Installation, commissioning, operations and maintenance guide**. Preparation is in progress, and will enable the link as soon as it becomes available.

3.1.3 Maintenance

The maintenance instructions are available in a separate document.

See **Halton Windis DWE Installation, commissioning, operations and maintenance guide**. Preparation is in progress, and will enable the link as soon as it becomes available.

3.2 Product selection

Technical data (Air, volume and sound)

Halton Windis DWE, 1000

Regulation	Air volume		HVC	Sound pressure level	Power consumption
[V]	[l/s]	[m^3/h]	Position	[dB(A)] 10 m^2sab	[W]
10	929	3345	1	77	666
8	797	2869	1	73	384
6	535	1926	1	64	149
4	307	1107	1	51	44
2	130	469	1	34	17
10	929	3345	2	77	667
8	797	2869	2	73	383
6	517	1861	2	64	149
4	303	1091	2	51	44

Regulation	Air volume		HVC	Sound pressure level	Power consumption
[V]	[l/s]	[m^3/h]	Position	[dB(A)] 10 m^2sab	[W]
2	123	444	2	34	17
10	929	3345	3	78	667
8	770	2771	3	73	384
6	507	1823	3	65	149
4	296	1067	3	51	44
2	122	437	3	35	17

Halton Windis DWE, 1500

Regulation	Air volume		HVC	Sound pressure level	Power consumption
[V]	[l/s]	[m^3/h]	Position	[dB(A)] 10 m^2sab	[W]
10	701	2523	1	76	502
8	567	2042	1	71	268
6	406	1461	1	63	104
4	235	847	1	50	31
2	106	381	1	32	12
10	695	2501	2	77	503
8	544	1960	2	71	268
6	380	1368	2	63	104
4	220	794	2	49	31
2	104	373	2	32	12
10	664	2389	3	77	503
8	512	1844	3	71	268
6	364	1310	3	63	104
4	245	882	3	49	31
2	97	349	3	32	12

Halton Windis DWE, 2000

Regulation	Air volume		HVC	Sound pressure level	Power consumption
[V]	[l/s]	[m^3/h]	Position	[dB(A)] 10 m^2sab	[W]
10	929	3345	1	77	666
8	797	2869	1	73	384
6	535	1926	1	64	149
4	307	1107	1	51	44
2	130	469	1	34	17
10	929	3345	2	77	667
8	797	2869	2	73	383
6	517	1861	2	64	149
4	303	1091	2	51	44
2	123	444	2	34	17
10	929	3345	3	78	667
8	770	2771	3	73	384
6	507	1823	3	65	149
4	296	1067	3	51	44
2	122	437	3	35	17

Halton Windis DWE, 2500

Regulation	Air volume		HVC	Sound pressure level	Power consumption
[V]	[l/s]	[m^3/h]	Position	[dB(A)] 10 m^2sab	[W]
10	1285	4626	1	77	665
8	1045	3762	1	72	355
6	742	2671	1	64	137
4	380	1368	1	51	41.9
2	211	760	1	34	17
10	1234	4444	2	78	665
8	1008	3629	2	73	355

Regulation	Air volume		HVC	Sound pressure level	Power consumption
[V]	[l/s]	[m^3/h]	Position	[dB(A)] 10 m^2sab	[W]
6	707	2544	2	64	138
4	371	1336	2	51	41.9
2	201	725	2	35	17
10	1138	4097	3	78	665
8	906	3262	3	73	355
6	657	2366	3	64	138
4	349	1255	3	51	41.9
2	201	725	3	36	17

4 Technical reference data

4.1 Connection diagram

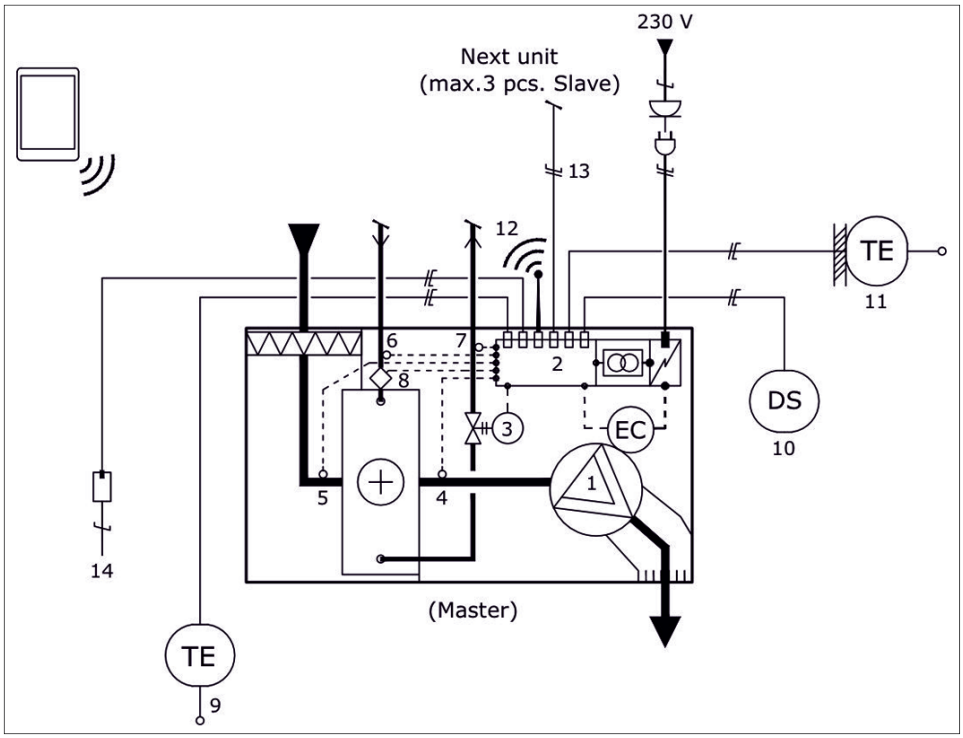


Fig. 4. Halton Windis DWE - connection diagram

No.	Materials	Function	Description
1	Fan	With EC motor	2-10 V, 0 V stop
2	Controller	Factory programmed	Modbus/Bacnet TCP or RTU / MSTP

No.	Materials	Function	Description
3	Valve and actuator	Heating	Belimo C215Q-J and CQD24A-SZ
4	Temperature sensor	Supply air	Sensor element
5	Temperature sensor	Intake air	Sensor element
6	Temperature sensor	Supply water	Sensor element
7	Temperature sensor	Return water	Sensor element
8	Energy meter	Supply water	Incl. pressure measurement
9	Temperature sensor	Room sensor	M12 connector, 10 m device cable
10	Door contact	Magnetic contact	M12 connector, 10 m device cable
11	Temperature sensor	Outdoor sensor	M12 connector, 10 m device cable
12	WLAN adaptor	Commissioning tool	-
13	Connection cable	Master-slave	M12 connector, 10 m device cable
14	General cabling box	CATaJ-45	1-part RJ-45 connector with dust cover

4.2 Performance data

4.2.1 Airflow performance data

DWI	Power [W]	Airflow [m^3/h]	Sound pressure level [dBa]	Current [A]	Width [mm]	Weight [kg]
100	336	800/1750	42/60	2,5	980	46
150	504	1200/2700	45/62	3,75	1480	>60
200	672	1600/3800	45/63	5	2016	79
250	672	1650/3900	45/63	5	2516	95

4.2.2 Water flow performance data

DWI	Power [W]	Water flow [l/s]	Pressure loss [kBa]	Power [kW]	Water flow [l/s]	Pressure loss [kPa]
100	11	0,137	4	7	0,056	1
150	18	0,231	12,5	14	0,11	3,5
200	22	0,274	8	14	0,12	2
250	27	0,33	12	20	0,15	3